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AN INQUIRY

INTO THE

EFFICACY OF DIGITALIS

IN THE TREATMENT OF

IDIOPATHIC EPILEPSY.



BY

EDMOND SHARKEY, A.B. M.D.,

ONE OF THE LECTURERS ON MIDWIFERY IN THE HUNTERIAN SCHOOL OF MEDICINE, CHARLOTTE STREET, BLOOMSBURY.

"Carpere vel noli nostra, vel ede tua."—MARTIAL.

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PREFACE.

Dr. Cheyne, in his excellent article on epilepsy in the Cyclopœdia of Practical Medicine, states that his principal motive in writing it is "to urge physicians to re-consider this disease with care, and no longer, as many of their brethren have done, to pronounce epilepsy, when unaccompanied by deformity of the cranium or imbecility of mind, incurable, until first they shall have endeavoured to correct in the patient every function which is disordered; and until, secondly, they shall have exhausted the whole armoury of the empiric." To contribute my mite towards carrying out the second of these two objects, by directing attention to what I consider a powerful, though neglected remedy, is the object of the following essay.

E. S.

3, *Charlotte Street, Bloomsbury, London.*
November 1840.

AN INQUIRY

INTO THE NATURE OF

IDIOPATHIC EPILEPSY.

INTRODUCTION.

Some years have now elapsed since my late revered father published * the results of some cases of epilepsy treated by digitalis. Although these were favourably received by the profession at the time, and much advantage anticipated in the treatment of this unmanageable disease, I have not seen in any work (periodical or otherwise), since then, any further notice of its employment. Remembering, as I do, those cases, and having myself made some experiments with the remedy, I think it may not be uninteresting to give some account of them, as also to inquire what grounds we have for concluding, à priori, from the powers of this medicine and the nature of the disease, that it is reasonable to expect good from it.

In order that I may do this more satisfactorily, I will give a brief outline of the phenomena of the dis-

* Lancet 1831.

ease, its causes and consequences, with some few of the modern opinions respecting its pathology. Secondly bring forward such cases as have been detailed by those who have tried the remedy in question; thirdly, institute a comparison between it and some of those remedies which have enjoyed the greatest share of confidence as possessing anti-epileptic powers; and, fourthly, endeavour to ascertain whether there are any evidences in its favour to be deduced from analogy.

DESCRIPTION.

A man appearing to enjoy all the attributes of perfect health all at once utters a cry and falls senseless; his muscles are agitated by convulsive motions; his respiration becomes embarrassed and stertorous; his face livid; the foam which issues from his mouth and enters with a sound into his trachea, unite with the former phenomena in making asphyxia appear imminent. But, by degrees, all these symptoms diminish and finally disappear, and the subject of them continues exhausted, dejected, and heavy; but his life is no longer threatened, and all the functions soon resume their usual regularity. This group of symptoms recurs at variable intervals, generally irregular, and constitutes the most ordinary form of epilepsy. Another form there is without convulsions, turgescence of the face, or foam at the mouth,

and consists in sudden loss of consciousness, general insensibility, muscular relaxation, and either a fall or merely a staggering of the body. The head falls either forward on the breast or backwards; but after the attack, which often lasts but a minute, consciousness returns, the patient continues the employment in which he has been interrupted, and retains no knowledge of what has passed — both most generally occur interchangeably, without regularity, in the same individuals, but it is not very rare to find the first alone. It is less common, but does nevertheless occur that the second constitutes the entire disease. Thus the authors who, speaking of epilepsy, call it a convulsive disease, are, in the majority of cases, right; but if we would give rigorous exactness to the general description which is used in default of a precise definition, we must, in accordance with what has been said, describe convulsions only as a frequent, not a constant symptom of the malady. We will therefore say that epilepsy is characterized by a sudden loss of consciousness, with general insensibility, complete relaxation of the voluntary muscles, or, as is most frequently the case, convulsions, sometimes violent and general, sometimes confined to one side of the body, to one portion of that side, to one muscle, or to some fibres of one muscle. When these convulsions exist, the respiration is stertorous, a frothy saliva escapes from the mouth, the face is red, approaching lividity; its vessels, as also those of the neck, being gorged with blood.

In the great majority of patients the epileptic attack, with or without convulsions, comes unannounced by any precursory symptom. In others it is preceded by some of the following phenomena: headache, hemicrania, derangement of vision, hearing, and intellect, a deeper colour of the face, dilatation of the pupils, a sensible alteration of temper as extreme irritability: various hallucinations also announce the near approach of an attack; but all these changes exist for a certain time, as a day or two before it comes on. In some patients the attack is immediately preceded by phenomena of another kind — some particular sensation of pain, cold, heat, itching, is all at once experienced in a toe, a finger, along a limb, in the belly or back, and from the point where it manifests itself it ascends gradually to the head, and immediately on its arrival there the patient drops, and convulsions take place. These sensations have received the name of Aura Epileptica: they have no influence on the form of the fits, which may present an infinite number of varieties. Most generally the epileptic, when seized by his attack, utters a shriek, falls senseless, and is seized by convulsions of greater or less duration. But it also may happen that the convulsions occur before the fall. They may moreover present very singular combinations of motions apparently allied to actions acquired in health.*

* Dr. Elliotson records a curious case in which the patient used to sing and dance before consciousness was restored.

Most commonly the convulsions cease by degrees, some deep inspirations take place, the motions of the chest recover their regularity, the face loses its livid hue, the eyes half open; and after having remained some time in a kind of stupor, the epileptic recovers his consciousness, but he is extremely fatigued. An irresistible inclination to sleep seizes him, after which he returns by little and little to his natural state, unless a fit of mania or dementia succeeds the attack for a time. In some patients instead of the hideous train of symptoms which we have just sketched, a faint scream, a convulsion, confined to some of the muscles of the face, a loss of consciousness of a minute's duration constitute the attack; and, lastly, we see some in whom, without any convulsion, a plaintive sigh, a relaxation of the muscular system, and dilatation of the pupils, combined with momentary loss of sense, are the only symptoms. In a considerable number of epileptics the attacks, whatever their form, happen during sleep as well as while awake; of the former occurrence the patient becomes aware by the extreme fatigue which he experiences on awaking.

The name of epilepsy, or "grand mal," has been given among the French to the more violent form of the disease, that of epileptical vertigo, or "petit mal," to the other. It is not unfrequent during the attacks, especially the severe ones, for patients to expel urine, fæces, and seminal fluid. The motions of the heart and carotids are irregular in force and fre-

quency, and the skin is covered by copious perspiration. In the majority of epileptics the memory grows gradually weak, according as the attack is often or seldom renewed; and in the intervals a diminution of intelligence is observed, which increasing gradually, leads in the end to confirmed idiotcy. In others the attack is followed by a paroxysm of most violent mania which likewise, by frequent repetition, hastens the same deplorable catastrophe.

It not unfrequently happens, that, after epileptic attacks, either a complete hemiplegia or paralysis of a limb exists for some days. In fine, in those who are least severely affected, an extreme irritability, violent passions, an unnatural impulse towards muscular exertion, and at the same time a weakness of the limbs from the most trifling causes, are the least consequences of what the brain suffers in these attacks. But even in these cases, there remains on the countenance of the epileptic a peculiar expression, which a practised eye easily recognises at the first glance. It is important to remark, that the intellectual decay comes on more constantly and rapidly in those affected by vertigo or "petit mal,"* than in those who have only violent convulsions, or the "grand mal."

Such is the graphic description of Andral. With regard to the premonitory symptoms which he has

* This form of the disease is described by Heberden, (Comment. cap. 33) "Oblivium quoddam et dilirium adeo breve ut fere ad se redeat priusquam ab adstantibus animadvertatur."

enumerated, I may remark, that they are more generally observed in the symptomatic than the idiopathic form of the disease; they assume a great variety of phases; often a feeling of emptiness or coldness in some part of the brain; great paleness of the face —I know one case where the fit was preceded for some days by a paleness of the nose and round the mouth;—tremblings of the iris, or alternate contractions and dilatations of the pupils; deafness, or a sense of humming or roaring as of the sea, or other noises. I know a case in which the patient used to reply to fancied questions, when no one had spoken; perversions of sensation, as peculiar tastes and disagreeable smells, violent sneezing, hiccup, pandiculation, difficult articulation, stammering, spasmodic affection of the larynx; sense of constriction about the fauces, throat, thorax, or abdomen; cramp of stomach; great voracity; copious discharge of watery or of loaded and offensive urine, hæmaturia, fætor of fæces, more frequently eructations and nausea, vomiting, or other dyspeptic symptoms. Frank states, that of twenty-one cases in the Hospital at Wilna, in seven the fit was preceded by vomiting; absence of mind. The hallucinations also are very various: one patient told me that, at the approach of a fit, she fancied every one about her was doing what she happened to be doing herself at the time. In some rare cases the aura, instead of proceeding from a remote part, and going towards the head, has issued from the latter and gone downwards.

PREDISPOSING CAUSES.

This malady attacks chiefly those persons who had been subject to convulsions during their first dentition, to tinea capitis, and other chronic eruptions in early life; to diseases of the head, violent affections of temper, or to disorders of mind, to an unbridled indulgence of the passions; to diseases of the ear, to affections of the glandular and lymphatic systems, to worms, to chorea, or to hysteria at any period previous to the epileptic seizure. Many of these disorders, however, may be viewed either as predisposing or exciting causes; or as indications of those early disturbances of the nervous system, and of the circulation of the cerebro-spinal centres, that lead on to further changes when left to themselves, until the fully-formed epileptic seizure is the result.

Although hereditary taint has been justly ranked among the predisposing causes, few will go so far as Dr. Cheyne, who says, that tubercular phthisis, psoas abscess, or any other acknowledged scrofulous disease, is not more truly so than is epilepsy.

EPILEPSY HEREDITARY.

On this point M. Bouchet has made the following observations:—Fourteen epileptic women gave birth

to fifty-eight children. Of these thirty-two died of convulsions at an early age; twenty-six lived longer, and of these fourteen had no nervous disorders; seven had various nervous (not convulsive) diseases; two only were epileptic; two had simple convulsions, and one hysteria.

Can mere fright affecting the mother cause the disease? However unaccountable, it does not appear contrary to analogy. M. Esquirol was of opinion that some cases of congenital madness were to be ascribed to the impression of terror on the pregnant mother's mind; and there is nothing to render this theory more inapplicable to epilepsy than to mania. Impressions on the mind of the nurse have the power of so changing the qualities of the secreted milk, as to cause convulsions in the child at her breast; and may not intra-uterine nutrition be subject to similar changes from a similar cause? Portal relates a case in which epilepsy occurred in a child at nurse, neither mother nor nurse being epileptic. The nurse was changed, and the epilepsy disappeared. These, and similar considerations, seem to show how epilepsy may be communicated by the mother, but with regard to the father it is not so plain. It is not, however, unlikely, that some allowance ought to be made on the score of imitation, which must have a greater opportunity for exerting its influence on persons of the same family.

SEX.

Opinions are divided on this point. Esquirol and Foville having asserted that females are more liable; while Cooke, Elliotson, and Cheyne are of the opposite opinion, and say that the apparent preponderance towards the female side is owing to imperfect diagnosis between epilepsy and other convulsive disorders affecting females.

TEMPERAMENT.

Some authors—as Esquirol—have considered the melancholic temperament to be among the predisposing causes. Others seem to think, more justly, that the extreme of plethora, or the opposite state, may lead to the disease; as we see convulsions arise, not only from an increased quantity of blood in the head, but likewise from a deficiency of it, as in the case of syncope produced by bleeding; and in animals dying of hœmorrhage, convulsions are a common symptom: facts which militate against the opinion of Dr. J. Johnson, that there is always a state of turgescence in the vessels of the brain at the time of the fit. If it were so, why, in the case mentioned by Dr. Elliotson, should the recumbent position have prevented, and the upright always produced as many as twenty

or thirty paroxysms? We shall find a similar result to have been observed in Case 21.

FRIGHT.

This is generally considered an exciting cause; but Dr. Prichard says, that, in many of the cases occurring in children between the 8th and 14th years, when this has been assigned as the cause, morbid matters in the intestinal canal have been the real one.

Other authors too are of opinion that most of the cases said to have been caused by terror, were cases of simple convulsion, and not genuine epilepsy.

IMITATION.

That this has occasioned the disease, cannot, I think, be denied; though some have asserted, that most of the cases ascribed to this cause have been rather instances of sympathetic hysteria.

DIVISIONS.

Epilepsy has been variously divided. The most modern division is that into simple, sympathetic, and complicated.

The *first* has been again divided into different spe-

cies, principally in reference to a state of plethora, or the reverse, co-existing with it; and by Dr. M. Hall, into centrifugal and centripetal.

The *second* comprehends the different varieties known under the name of spinal, cardiac, gastric, hepatic, intestinal, nephritic, genital or uterine, nervous, &c.

And the *complications* again have been also divided into those with mania, apoplexy, paralysis, hysteria, chorea, catalepsy, somnambulism.

It would be foreign from my purpose to treat of these various forms of the disease. Indeed, whoever will study the history of them, will find, that the treatment to be laid down for them must be in the first instance the treatment of diseases of the organs which give to them their names; and that, when all obvious derangement of these organs has been remedied, the essence of the disease often remains. Thus, Prichard says, "Epilepsy becomes a permanent malady, when the disease induced in the brain, or in other parts of the nervous fabric, though at first the result of gastric or intestinal irritation, has taken a firm hold in the system, through the influence of habit, or by the effect of disorganization, occasioned by long-continued morbid action." And M. Jolly (Dict. de Méd. et de Chirurg.), "Bien plus il peut exister des actes morbides sans cause réelle; c'est-à-dire, des effets qui persistent ou se reproduisent après la cessation des causes qui y ont fait de l'aptitude de l'organisme

à reproduire les mêmes actes à certaines époques, comme les fièvres intermittentes, les neuralgies, l'épilepsie," &c. (Art. Périodicité.) This morbid habit it is which constitutes, according to my view, true idiopathic epilepsy in its strictest sense, irrespective of any appreciable alteration in structure, or the existence of any plethora, except what has been termed *relative* plethora, it being meant by that term to convey the fact that the natural quantity of blood has in this excitable state all the ill effect of an increased quantity under other circumstances, which is only another mode of expressing what is contained in the definition which I have adopted. It is to the removal of this habit that all really anti-epileptic remedies must be directed, and to this, if at all useful, that digitalis is alone applicable.

PATHOLOGY.

It has been always, since pathological investigations have begun to be cultivated, a primary object to assign some structural change, to account for symptoms observed. Accordingly, in the diseases of the nervous system, corresponding changes of structure in some part have been observed, or supposed to have been observed. Thus Greding frequently found disease of the pituitary gland, in cases of mental affections; as did the Wenzels in epileptic subjects. But often, in such cases, the lesion has not been confined to this

part, but has been accompanied by disorganizations of other parts of the brain.

Bouchet and Casauvielh have endeavoured to prove that epilepsy was caused by inflammation of the white, and mental alienation, by that of the grey substance of the brain. But, as has been remarked by Müller, "the results of pathological anatomy can never have more than a limited application to the functions of the brain; for we are perfectly ignorant of the laws regulating the participation of its different parts in the affections of each other;" and we can only thus far generalize, namely, that organic diseases in one part have the power of inducing functional changes in other parts; but there is no certainty in conclusions based on such meagre data. So inadequate is pathological anatomy for explaining all the phenomena of functional disease, that we find nothing, in many instances, to explain functional derangement of the central organs of sense but some degeneration in a remote and unconnected portion of the brain, or even of the spinal cord, as in the example of amaurosis dependent on tabes dorsalis. And again, how often does the power or capacity of habituation in the brain prevent the occurrence of functional disorder from causes at other times productive of the most violent effects. Thus, pressure from a tumour so chronic in its advance as not to cause complete atrophy, is often borne without inconvenience, and hence the vast difference to be observed between the effects of sudden and those of gradual lesions of the brain.

DIAGNOSIS.

Epilepsy is distinguished from hysteria by these marks: In hysteria the sensibility is only obscured, never completely lost, and the recovery takes place without any sopor or fatigue. Dr. Marshall Hall says, that the grand distinction between epilepsy and hysteria, consists in the closure of the glottis, which is absent in the latter. Hence in the former case, the expiratory efforts which fill the veins, and thus cause congestion of the brain; and in the latter, the suspirious breathing and absence of congestion.

From convulsions in children, by not being so continued or recurrent, and by being more regular in its course. There is likewise in the latter more febrile disturbance, thirst, and disorder of digestive organs. Convulsions are in short an acute disease, whereas epilepsy is chronic.

From apoplexy, by the fact that there is in the latter a dormant sensibility, which may be called into action by tickling the soles; in which case the leg of the apoplectic is drawn up, which it is not in the epileptic; also by not leaving after it permanent paralysis.

It is distinguished from all others by the scream, and the sudden and complete loss of sensibility; by the spastic rigidity of the muscles in the first stage; by the convulsions in the second being more tetanic than clonic, unless in severe cases ac-

companied by apoplexy; by the foaming mouth, distorted features, and livid countenance; by priapism and unconscious discharges; by the injury done to the tongue; and, lastly, by the subsequent sopor or mental alienation.

CONSEQUENCES.

The consequences of long-continued epilepsy are mania, insanity, idiotcy, and paralysis. The two former are more frequently the results of this disease on the continent; paralysis and idiotcy here. But though Van Swieten says that those who have early become insane have been generally at first epileptic, (Dict. Pract. Med.), Copeland states it as his opinion, that in these cases the attacks have been generally of the irregular convulsive kind, rather than the truly epileptic. The following is a statement furnished from the Salpetrière in 1813:—Of 289 epileptics, 80 were maniacs, and 56 in various states of mental alienation and imbecility. In 1822, of 339 epileptics in the same hospital, 2 were monomaniacs, 30 maniacs, 34 furious maniacs, 129 insane for some time after the paroxysm, 16 constantly so, 8 idiotic, 50 upon the whole reasonable, but with impaired memory and liable to occasional slight dilirium and tendency to insanity; and 60 without aberrations of intellect, but susceptible, irascible, capricious, obstinate, and presenting something singular in their characters.

TREATMENT.

Into the general treatment of this disease in all its varieties, it is not, as I before said, my purpose to enter; that is the office of a systematic work. But I will briefly touch on a few particulars which may come within the reach of non-professional, no less than professional persons. We may, with Celsus, lay it down as a rule, that little is to be done in the paroxysm, beyond the precautions necessary for preserving the patient from the effects of his own struggles. His shoulders and head must be raised, and the latter laid on a soft pillow, a thin slip of cork or other soft wood placed between his teeth. His limbs must not be too violently coerced, as there is an indistinct sensation, which evidently is excited to oppose resistance, and the fit is prolonged in duration and increased in violence thereby. Stimulants to the nostrils are not advisable; and bleeding is never necessary, except there be marked plethora or cerebral congestion to indicate it — which may be the case especially in first attacks, and when the disease is consequent upon suppressed sanguineous evacuations. All ligatures and cinctures should be removed. If the case be one in which an aura, or other premonitory symptom, so long precedes the fit, as to allow of any preventive measures, the patient's companion (who should be constantly with him) may use cold

aspersion to the face, or give a pinch of snuff, which in some cases prevent the attack; or he may be provided with an anti-spasmodic draught for the same purpose; he may also try to intercept the aura, if there be one.

Having thus briefly touched on the management of the paroxysm, I hasten to the immediate object of the present inquiry, and will detail the cases in the order in which they occurred.

The earliest notice of the efficacy of digitalis in epilepsy, seems to be that contained in Parkinson's Theatrum Botanicum Lond. 1640. p. 654.

"And it hath beene of later experience also found to be effectuall against the falling sicknesse,that divers have beene cured thereby; for after taking of the decoction of two handfulls thereof, with foure ounces of pollipody of the oake bruised, made in ale, they that have been troubled with that disease 26 yeares, and have fallen once in a weake, or two or three times in a moneth, have not fallen once in 14 or 15 moneths, that is, until the writing hereof; which I think may be sayd to be an absolute cure, not to be presumed that after so long stay it should return againe."

The next writer we find mentioning the use of digitalis in epilepsy, is Dr. Withering, in 1785. He gave it however in the usual moderate doses, and if its utility were limited to the cases in which he derived advantage from it (viz., to epilepsy depending on effusion, which we know to be the consequence rather

than the cause of the disease), it would not be worth noticing as an anti-epileptic remedy. He gave it in two cases. His words are as follow:

"In epilepsy dependent on effusion, the digitalis will effect a cure. It has not had a sufficient trial in my hands to determine what it can do in other kinds of epilepsy." He expresses himself similarly as to its powers in cases of insanity, but hints that further experience may show its usefulness to be more extensive.

Mr. Wainwright, writing to Dr. Withering on the same subject, says, "There are diseases it cannot cure; and in several of those patients in this town, who took digitalis, there was the most positive proof of the viscera being unsound. In these desperate cases it palliated a disease which medicine could not remove. At a remote distance physicians are seldom applied to for advice in trifling disorders. Many remedies have been tried without relief, and the disease is generally obstinate or confirmed. It would not be fair to try the merits of digitalis in this scale."

Though I believe he here alludes to its use in dropsy, yet what he says in the last sentence applies with greater force to epilepsy, in which morbid habit is so strong.

From this period till 1795, I do not find any mention made of this mode of treatment; but in the latter year Dr. Currie (Mem. Med. Soc. Lond. vol. 4) states, that he gave it in three cases. On the first taking of it, the fits in all of them returned at longer

intervals, and were thought not to be so violent; but after it had been used for some time, the fits became as violent and frequent as they had ever been, and the medicine was laid aside. The dose is not mentioned, but it was probably the usual small one.

I do not find on record any trial made of this treatment subsequently to this till 1807, when my father tried it, in conjunction with Dr. Mills of Dublin, as detailed in the Lancet of 27th Aug., 1831.

I make an extract from the article:—

Case 6.

After having had an authentic account of the success of the treatment about to be detailed in several cases, particularly that of the son of Mr. Angel, of Dublin, a respectable teacher of the deaf and dumb, I was resolved to try it in the first case which should present itself; and the first was that of Miss Fowkes, niece of a respectable alderman of Dublin, aged about seventeen years. She had been seized with epilepsy twelve months before. She had been under the care of the late Dr. Thomas Mills, and was daily growing worse under the use of the medicines then recommended by the most able practitioners; I was then called in, and in conjunction with Dr. Mills, adopted the following treatment, as I find in my notes:—

Sept. 4th, 1817. ℞ Foliorum Digital. purp. recentium ʒiii ss. Contunde in mortario in pulpam; dein adde cerivisiæ fortioris lbj; Infunde per

horas septem ; dein cola exprimendo. Capiat liquoris Colati ʒiv, cum Pulv. fol. Polypodii quercus siccatorum, aut radicis siccatæ gr. x. She was of leucophlegmatic temperament, fair hair and complexion ; the disease not hereditary.

5th. Took the draught yesterday, and in ten minutes had a fit less severe and shorter than usual ; vomited frequently and violently till 12 of this day, her pulse sinking from 120 to 54, intermittent and irregular ; complains much of pain of head, and soreness of epigastrium on pressure. We ordered a blister to epigastrium, and a cup of strong coffee. She had cramps in the muscles of her legs this moment ; extremities cold at times. Cap. Decoct. Avenæ lbj, 2da. q. q. horâ.

6th. Has had no fit ; vomiting continued violently till 10 o'clock this morning ; pulse 40, irregular, and intermittent ; great prostration of strength. Took a cup of coffee yesterday, and continues decoct. avenæ. Cramps of legs returned last night. Pupils have been dilated from the beginning of treatment.

7th. Continues to vomit very bilious matter ; fæces also bilious, of dark brown colour ; pulse as before, but less irregular ; great weakness ; pupils dilated. Cont. decoct. avenæ.

8th. Continues free from fits ; vomits much bilious matter as before ; fæces also of same character ; pulse still irregular, about 60, great weakness ; pupils dilated.

16th. Continues free from fits; strength restored; pupils contract; appetite good.

I watched this case for two years, and there was no return of fits, which had been of almost daily occurrence.

The omission of the state of uterine functions here is to be regretted. He proceeds:—

Case 7.

The next case which I select is that of a gentleman of this city, who had been severely affected by epilepsy for twenty years. He was of robust form, sanguine temperament, great abdominal congestion; general health very good. He was treated by several physicians of eminence, and pronounced incurable. Amongst other remedies, he took nitrate of silver to a large amount, which discoloured him horridly, without advantage. Suffice it to say, for the sake of brevity, that I had him under preparatory * treatment for two or three months without any abatement of the fits. I administered the digitalis and polypody (the leaves) to him as above, with similar effects. The prostration of strength and diminution of pulse in this case was absolutely frightful. He has had no return of fits for ten years.†

* Regulation of secretions, &c.

† In reply to inquiries made of this gentleman, through my friend Dr. Wood, of Cork, I yesterday was informed "that he never had them

I also cured his brother six years ago, who likewise has been since exempt.

Case 8.

He gives another case of a young girl in whom menstruation had never taken place. But I have reason to think that in that instance a cure was not effected. She had also used turpentine without benefit.

In the Lancet, Feb. 4th, 1831, he relates three other cases.

Case 9.

One of these was a case of epileptic insanity. At the time when he was desired to take the digitalis, he was attacked by a maniacal paroxysm of great violence requiring the use of handcuffs. At the time of taking the dose his pulse was 140. He refused to drink any gruel after it; and, whether from this cause or not, he did not vomit from the 20th till the 22nd, and then only by the assistance of a hippo emetic. His pulse had now fallen to 56. He was removed to a lunatic asylum; and it is stated, that he recovered his reason, was free from fits, and his intellects seemed quite restored to their former clearness.

after; and that he also had an acquaintance who was subject to them, who was treated by my father with digitalis, and recovered."

Case 10.

Another case here related, was one in which a permanent paralysis and amaurosis made it highly probable that disorganization existed; and, as might have been anticipated, a cure was not effected.

Though some of these cases of my father's occurred subsequently to those which follow, I have, for convenience' sake, numbered them as if consecutive.

In the 9th Vol. Ed. Med. Surg. Journal, in 1812, Dr. Percival has published the following cases.

Cases 11 and 12.

A woman, whose catamenia were obstructed, laboured also under epilepsy. He administered Ol. Terebinth., with the effect of procuring a cessation of the fits for a period of two months.

It may be remarked that the alleviation was accompanied by a return of the catamenia on the day after having taken the first dose of Turpentine. The fits subsequently recurred.

In a second case of a similar kind, he gave the Ol. Tereb., with a similar result as to the Catamenia; and also in a third. In these two latter cases the duration of respite was a month. In the two former cases, after the failure of the Turpentine, he gave an infusion of digitalis, prepared from the dried leaf; viz., a decoction of ʒij in ℥vi

of water: one half given first, and the other in two hours. The same patient took it a second time of the strength ʒiii to ℥vi water, in the same way. In the second case, he gave it "in divided doses, with as little interval as possible." The effects are stated to have continued for eight or ten hours in one case, for "several" in the other. No benefit was derived.

Copland remarks on these, "that this was an unsatisfactory trial of digitalis; for," says he, "it is not by the empirical exhibition of one or two large doses of this medicine that good effects can be obtained from it in a chronic complaint."

But I should rather say, that the cases were not at all suited to its employment, as being complicated with uterine derangement.

In 1827 Mr. Scott published the following:—

Case 13.

A boy, æt. 9, had hydrocephalus, either congenital, or arising very soon after birth, accompanied by epileptic fits. Under appropriate treatment the head, which had been greatly enlarged, resumed its natural size, and the fits disappeared for nine months. They recurred, and were again removed for the same period. Again, however, they returned, and for the space of four years previously to Mr. Scott's attendance, a day never passed without a fit, and there were usually six or seven daily.

They were generally preceded by twitchings of the facial muscles, but sometimes gave no indication of their approach. Leeches and blisters to the head were first tried, but with the effect of rendering the fits more frequent and severe. He then was put upon the use of Tinct. Digital., which was gradually increased so far as gtt. xii. three times daily. Under this treatment a cessation of the fits for four months was obtained, but the twitches continued. The digitalis was now stopped, and the fits returned; but were milder, and recurred once in ten days. The mother of the boy having observed that the twitches were more violent at the approach of the fit, adopted the plan of giving the Tinct. Digital. freely when these were observed; thus the twitchings were diminished, and the fits apparently prevented. She sometimes gave as much as a teaspoonful at once. On one occasion the boy got at the bottle, and drank the entire contents (from two to three drachms), producing the usual symptoms of an over dose, which were removed by the administration of brandy and opium. He had two severe fits at the time. The mother's account was, that an amendment commenced after this. When given in the way adopted by her, the medicine had no other obvious effect than that of diminishing the velocity of the circulation, which was very rapid, and removing the twitches. No increase of urine was observed, and the appetite continued good. He never complained of headache, his

growth proceeded, and his friends considered his mental faculties improved.

The fits used frequently to occur during sleep, or the state between sleeping and waking. This is very generally the case in epileptic attacks, and Mr. S. endeavours to account for the fact, by the venous congestion which exists in that condition of the system. I will further notice this in another place.

Case 14.

Dr. Briggs, in the same volume, details a case in which fits of imperfect epilepsy co-existed with diseased heart, for a period of three years and a half. He gave Digital. in ¼ gr. doses of the powder, and states, that after a very small quantity had been taken (two grains), the fits disappeared.

This case presented a remarkable instance of sympathy between the genital organs and the head. It was supposed that the patient had gonorrhœa, and was directed to use an injection; and the constant result of the operation was a darting pain through the vertex. It is also worthy of observation, that the seminal emissions with which he was affected, disappeared with the fits under the use of the digitalis. The case, however, is not related with that accuracy which we could desire.

Case 15.

Mr. A. Courtney, in the Lancet, Oct. 8th, 1831,

relates the case of a young man who was attacked by epilepsy in his 16th year. No cause could be assigned. He continued for nine years subject to it, and in the year 1802 took digitalis and polypody in the following manner :—

"Recent leaves of digitalis four ounces, infused for twenty-four hours in a pint of boiling water. When strained, this was divided into three doses, one of which was ordered to be taken every third day with fifteen grains of the dried leaves of polypody in powder. But such was the effect of the first dose, that his relations would not permit him to take a second ; for, a few minutes after he had taken it, a vomiting commenced, which, in spite of every thing that could be done to allay it, continued almost incessantly for five days, accompanied with such prostration of strength, that it was thought at times doubtful whether he was dead or alive." He never had a return of the fit up to the date of the communication. Every remedy that the most experienced practitioners could suggest, was tried previously. It will be observed that the dose exhibited was considerably stronger than any given by my father.

Case 16.

Aug. 31, 1832. Edward Sheehan, æt. 25, of robust form ; has been eight years labouring under epileptic fits, which, he says, come on without any apparent cause ; but that he has been ever since his

boyhood affected by pyrosis, which usually becomes aggravated before an attack. None of his family epileptic. No uneasiness of head precedes the attack. Appetite good, but tongue is fissured remarkably at the base, and is strongly indicative of gastric irritation. He says, the fit is preceded by "a heaviness and cutting about the stomach and heart, which rises to his throat," and he thinks that if he could discharge his stomaeh at the moment, the fit would not occur. At the commencement of the disease he used not to fall, but merely to become insensible. Bowels generally costive, and the discharges morbid; epigastrium not tender.

He took, at my father's recommendation, the digitalis in the full dose, without any mitigation of his disease. The report does not say whether he had been previously treated for the gastric symptoms. I ordered him a mixture with Aqua Calcis, Liquor Potassæ, and Tinct. Hyoscyami, and a strong antispasmodic draught at the approach of a fit — but he did not persevere.

This was evidently a case in which a recovery was not to be looked for without having previously subdued the gastric disease; a disease very common among the lower orders in Ireland, to which they are in general doomed to be subject all their lives; their diet consisting mainly of potatoes, which they eat at long intervals, and therefore in large quantities, causing distention and dyspepsia, and often, as a consequence of long-continued func-

tional disorder, a subacute inflammation. They cannot procure the diet necessary for them, and they are not cases for hospitals as at present constituted.

Case 17.

Dublin, Nov. 21, 1832. Thos. Connor, æt. 14, subject to epileptic fits since infancy. General health good, but right side is in some degree paralysed, and was so before the commencement of fits, and he has been always affected with twitchings of muscles of face. External configuration of head, natural. Pupils contractile. No headache nor other sensations of head previous to attack. No spinal tenderness. The only premonitory symptom is a feeling of general uneasiness. The fits occurred at first about once a month, latterly they come on three times a week, and leave after them a headache and weakness of his mind, which is not at any time very clear, sufficiently so however to enable him to receive elementary instruction at school. Bowels torpid, and fulness of epigastrium. I prescribed in the first instance purgatives, and put him on the use of Ol. Tereb. ʒi. three times a day, with the effect of slightly diminishing the frequency and severity of the fits. I afterwards gave him half an ounce of the Infus. Digital. of the Pharmacopœia three times a day; it produced no vertigo nor intermission of the

pulse, and while taking it the fits were more frequent though less severe.

11th. 8½ a. m. Gave him ʒiij. of the strong Infusion (my father's formula), pupils being contractile, and pulse 92, with some irregularity at the time. No head sensations, and bowels regular.

12½ p. m. Has not vomited; p. 72, irregular.

3½ p. m. Vomited at 2 p. m., and several times since, matter of very bilious appearance. Pupils very much dilated, but sensible to light. Vertigo, but no cramps. Pulse 88.

9½ p. m. Vomiting continues; feet cold; hiccup. P. 44, intermitting.

12th. 8½ a. m. No sleep. Vomiting continues. Pulse 44 after vomiting—96 in the intervals No motion from bowels; no increase of urine. Hiccup continues. Had a slight fit at 1 a. m.

4½ p. m. P. 96, slightly irregular. Action of heart of good strength. Is sleeping. Body, with exception of feet, warm. Has taken some broth and dry toast.

13th. 8½ a. m. Vomiting continues. P. 56, irregular and intermittent. Had a fit this morning.

2½ p. m. Another fit. P. as before. Has considerable vertigo.

6 p. m. Another fit. Great weakness. P. 48—52. Vomiting continues. Bowels not moved, though an enema has been given. Feet cold. To have chicken broth.

14th. Vomiting has ceased. Irregularity of pulse continues (52). Circumscribed flush on cheeks. Has had two fits. Temperature natural, vertigo continues.

The report of the 20th of Feb. is, "The fits continue as frequent, but not so violent nor so long as formerly. General health quite good. Has discontinued all medicine."

Case 18.

1831, Dublin. Mrs. Kinsela, æt. 36. Has been for 13 years subject to epileptic attacks —cause not assigned. They are less frequent, but more severe than formerly, and leave after them more general disturbance when the interval has been long. Is subject to hysterical attacks also, with costive bowels and flatulent distention, and consequent uneasiness of stomach, &c. Sallow countenance. Upon examining the spine by pressure, though no pain was evinced, when it was made low down a violent tremor of right lower extremity came on, obliging her to sit down. I commenced the treatment with Asafœtida, laxatives, and tonics, which merely produced some general amendment. I then gave Pulv. Digital. gr. i. four times a day, with the effect of removing the tremors. I then gave her a tablespoonful of the strong Infusion of Digital., and repeated it in 2 hours. It produced straining, vomiting, and irregular pulse; the two former did not last above

24 hours, and she had a fit after they were over. I afterwards lost sight of her.

Case 19.

1832, Dublin. Dora Copley, æt. 16, an exceedingly interesting, intelligent girl, of fair hair and complexion, for two years subject to epilepsy. The first attack occurred while she was asleep, and was caused by mental uneasiness. The fits have latterly increased in frequency and severity (about 3 in 14 days); they are ushered in by tremors and palpitation; she falls, froths at the mouth, and on recovery sleeps soundly — they leave after them malaise for a day or two.

General state—Catamenia have never appeared; she has palpitation, dry cough, and occasionally slight hœmoptysis; bowels costive and slight epigastric tenderness, but no evidence of hepatic disease.

I commenced the treatment by endeavouring to regulate the bowels, and then gave small doses of the strong Infusion of Digitalis, and subsequently larger ones, producing slight vomiting. The effect was a diminution in the violence of the convulsions.

The report of June 27th is:—"Catamenia have appeared in natural quantity; she continued subsequently free from fits for two months. After that, catamenia did not recur regularly; the fits have returned, and she is subject to irregularity

of bowels and swelling of stomach and legs. I left Dublin about that time, and have not since heard of her.

Case 20.

Dublin, Jan. 31st. 1832. Rose Tyndal, æt. 16, a plump, healthy-looking girl, subject to epileptic attacks since childhood — stated to have been brought on by fright in consequence of her schoolmistress having locked her up in a cellar by herself; she was admitted into Sir Patrick Dun's Hospital in the beginning of the winter, and treated as a case of hysterical epilepsy, with assafœtida principally, from which she derived some benefit, but was discharged still liable to fits.

Present State.—Has never menstruated; the fits, which at first were of the imperfect kind, are now accompanied by frothing at the mouth, and followed by deep sleep, and are more frequent; they commence with hurried respiration and sighing. I began the treatment with Galbanum Pill and purgative mixture, from which she derived benefit, so far as to have intervals of four weeks. General health good, bowels torpid, slight epigastric tenderness, and general abdominal fulness, but no evidence of hepatic disorder. Cap. Pulv. Digital. gr. i. ter die.

Feb. 4th. Digitalis causes nausea, and acts gently on the bowels; pupils dilated, but contractile; p. 60, somewhat irregular and full.

16th. Fits continue. She is constantly irritated, and sometimes beaten by her sister, who sometimes pulls her hair so violently as to bring on severe headache. Has premonitory sensations at present, indicating approach of a fit. Fiat V. S. Blood natural. I increased the dose of Pulv. Digital. to gr. ij. It is needless to continue the reports of the case further than to say, that the intervals were increased to five weeks; but from the unkind treatment she experienced, and the irregularity in taking the medicine prescribed, she relapsed, and I discontinued my attendance.

Case 21.

Cork, Sept. 1837. A young lady, æt. 26, of sanguine temperament, and inclined to corpulence, was first attacked by epilepsy after incessant seasickness during a voyage from Edinburgh to London in May 1825. The fit occurred previously to her leaving the vessel, and returned twice at an interval of from four to six weeks during her stay in London. She was bled, purged, and blistered behind the ears. She returned to Scotland in October of the same year, and continued free from fits for nearly a year. She had never menstruated. After this time the fits became frequent, sometimes as many as two in the week; but the general interval was a month. She was now bled again, an issue was opened in the crown of the head, and

she took large doses of Pulv. Valerianæ. In 1829 she was treated by emmenagogues, menses never having appeared. They appeared, and the fits were diminished in frequency, not occurring oftener than once in two, sometimes four months. However, for eighteen months previous to October 1833, they again became more frequent, generally once a month, the day after the cessation of the catamenia; and it was remarked, that the fit was more likely to attack, if they returned exactly to the day. She was treated with purgatives, low diet, and took a good deal of out-door exercise, and her general health continued good. The fits were generally preceded by occasional fits of abstraction, one or two white streaks on her face, which was naturally florid, increase of appetite, and noise in her ears, described as a puffing sound. If she remained in bed at the usual time of getting a fit, it used to pass away; but unusually sound sleep was the forerunner of an attack. She was subject to swelling of feet, stomach, and bowels, and also costiveness, with flatulence. On one occasion she had the severest fit of spasmodic cough I ever witnessed; it lasted upwards of four hours, without one minute's intermission, and was accompanied by spasm of the glottis, causing croupy sound in inspiration. The action of the diaphragm was so powerful as to overcome every effort made to restrain it. Pediluvium and friction to the spine, with antispasmodic draughts were used, but the

latter were but imperfectly administered, on account of the spasm of the glottis, and it was not until this had been overcome by cold aspersion so as to allow a drink of cold water to be taken, that the fit yielded, leaving her exhausted and bathed in perspiration, after which she sunk into a deep sleep. I considered this at the time to be the nisus epilepticus turned aside as it were into another channel. She took the strong dose of Digitalis without any benefit, further than rendering the fit of a milder character, and more of the imperfect form. It was repeated with similar want of success; and though the effects each time produced were extreme and alarming, so resolved was she to give the remedy a full trial, that she took it twice afterwards notwithstanding our disapproval. The characters of the attacks became subsequently milder, and they were less frequent, and the interval sometimes prolonged to five or six months, and she now, I believe, enjoys good health.

Cases 22 & 23.

Mr. Knight, in his Work on Insanity, published in 1827, reports two cases of epileptic insanity which recovered by the use of Oil of Turpentine, and Tinct. Digitalis, in combination, viz: — in one of the cases, Tinct. Digitalis, gtt. viij. Ol. Tereb. ʒiij. ter in die.

OBSERVATIONS.

It may be remarked of the 7th case, that it was probably hereditary, from the occurrence of the disease in the idiopathic form in two brothers, and is therefore calculated to give encouragement, as showing that this feature, though unfavourable, does not render a case hopeless. The 9th is indeed an extraordinary one, and not more extraordinary than interesting, inasmuch as it exhibits the removal of the disease in one of its worst complications. It is unnecessary to expatiate on the blessings which would accrue to the innumerable hopeless tenants of the mad-house cell, in whom the double affliction exists, if the anticipations which it is calculated to excite should be realized. Of the 10th I have already expressed my opinion. Of the 11th and 12th I will only say, that they, together with the 16th, 18th, 19th, and 20th, prove, to my mind, that the uterine complication contra-indicates the use of digitalis in "heroic" doses. In the 21st again we have an instance of the catamenial complication most probably supervening upon the original disease; and in this case also we see the disease resisting the fullest trial of the large dose; for I do not think that the amendment which ensued was fairly attributable to it. The 6th, 7th, and 15th, tend to show that the more violent

the effects produced by the medicine, short of death itself, the more likely is the cure to be permanent and effectual. The 11th was one in which disorganization had most probably taken place. Although the 16th, 18th, 19th, 20th, and 21st cases show the truth of the negative position, that in these cases we cannot expect to derive permanent relief from the remedy in question; yet I by no means intend to say, that even in them some palliation may not result from it: but, given in the way in which alone it is calculated to give substantial relief, there is too great a risk to be run for anything but a radical cure. That this risk, however, is not so great in such cases as we might at first suppose, I shall endeavour hereafter to show; and it seems in a great measure proved (as far as one case can go) by the single fact of its having been taken four times by one person with safety in the 21st case.

As a second trial of the remedy was subsequently made in Case 10, I will here relate the case in full.

Denis Fitzpatrick, aged about 30. Subject to epilepsy for a period of three years. Has also amaurosis, said to have preceded and to be independent of the disease. The fits, until seventeen weeks ago, did not occur oftener than once a week; but since the beginning of that time, they have been growing worse, and sometimes attack him several times in the day. Intellects weak;

has been long subject to incontinence of urine; bowels costive. Has been treated principally by mercurial purgatives.

Feb. 15th, 1831. He took digitalis in the following way, viz., ℞ Fol. Digital. Siccat. ʒiss, cerevisiæ bullient. q. s. ut infundendo per horas septem postea colentur ʒiv, Cap. ʒi, q. q. semihorâ.

3 o'clock, p. m. Took the infusion, beginning at 7, a. m. to day. No intermission of pulse at present.

16th. Has not vomited; complains much of headache, to which he is subject. P. 60, slow and full.

17th. Had a fit this morning not so severe as usual. P. 116, without intermission.

18th. No fit. P. 104.

19th. No fit. P. 88. Bowels confined. The character of the fits differs at present from what it formerly was. They are not now accompanied by clonic spasms, but he grows stiff and snores.

21st. Free from fit. Had a copious discharge of hard fæces without medicine last night. Intellects improved.

25th. A fit. Incontinence of urine increased.

Nov. 7th. *Has had but three fits* since last report. This morning gave him ʒiv of the infusion as before, in one dose. "He felt so light" after, as to begin to dance.

12½, (noon). Severe headache. P. 108, small, but scarcely any irregularity. Took a pint of gruel.

3½, p. m. Has vomited. Headache relieved. *Intellects perfect.* Bowels costive. P. 84, regular.

15th. Free from fit.

29th. Ditto.

This case possesses several points of interest. The tolerance of the large dose without producing any marked effect on the pulse; the intoxicating effect of it in the first instance; the improvement of the intellects; and the palliation of the disease effected — only three fits having occurred between February and November, they having been of repeated daily occurrence previously, and this in a case which evidently was of the apoplectic variety, as appeared by the accompanying paralysis, and the fact of his having subsequently died in a fit.

It will be observed, that in Case 6, as well as in some of the unsuccessful ones, a fit closely followed the administration of the medicine: the reason of this will subsequently appear.

COMPARISON OF REMEDIES.

In instituting a comparison between the results of the treatment with Digitalis, and that with other remedial agents, I will select the two which have most recently acquired, and still continue to enjoy the greatest repute, viz., Oil of Turpentine and Nitrate of Silver.

TURPENTINE.

This was recommended by Drs. Latham and Perceval nearly at the same time; Dr. P. acknowledging, however, that he first derived the idea from Dr. Latham. He has published the cases (11th and 12th) before quoted, in the 9th vol. Edin. Med. and Surg. Journ. But from them it will appear, that the treatment did not continue more than one or two months. Dr. Latham states, that he gave it in "several" epileptic cases, "in one or two with complete success."

In 1815 Dr. Young, (5th vol. Trans. Coll. Physic. London), records two cases of epilepsy treated in the same way: — First, that of a child eleven years, in whom it was of some months' standing. He administered a large dose of oil of turpentine, and he continued for two or three months free. The second was that of a boy, in whom the disease attacked once in ten days, and by the use of the same medicine he continued "free for the rest of the autumn."

A more extensive trial was made of it by Dr. Prichard, who (Diseases of Nerv. Syst.) records fifteen cases of uterine epilepsy treated with turpentine, accompanied by blood-letting. Thirteen of these were relieved, but three of them are said to have afterwards relapsed. Most of the rest probably did the same; for the date of the last report in

their history is in general not more remote from the last recorded fit than was the relapse, when ascertained, from the attack last preceding. And though they were desired to return in case of relapse, I know from my own experience, that in dispensary practice, this is not a sure guarantee, partly from the disinclination of such patients to acknowledge the persistence of the disease, and partly from the discouragement produced by the former failure. So that probably the uterine derangement, or the plethora which was the exciting cause for the time, had been alone removed; but the epileptic habit, the essence of the disease remained as before. Indeed, he expresses his opinion, that the remedy is useless in the idiopathic form of the disease; and that the cases of success by its means, related by Drs. Latham and Percival, were instances of the enteric form, as he himself found its power very great in that species, by removing diarrhœa and tenesmus arising from morbid secretions, and giving the evacuations a healthy character. More recently still, Dr. Elliotson has given a full trial to the anti-epileptic powers of turpentine; but, I believe, not with any more favourable result.

NITRATE OF SILVER.

Nitrate of silver has had better success in the hands of modern physicians, especially Drs. James

Johnson and Lombard. Their testimony, however, is by no means uniform.

Dr. Young (5th vol. Trans. Coll. Phys. London) states, "Nitrate of silver, which I have often employed very liberally, has always failed of affording me any assistance in the cure of genuine epilepsy."

Dr. Sims (Mem. Med. Soc. London, vol. 5) says, "that he gave it in two cases, in which the disease had not returned after a lapse of three and four months;" but adds, "that many cases were too inveterate to yield to it."

Prichard considers not only oil of turpentine, but likewise nit. argent., and other metallic salts, useless in the idiopatic form.

Dr. Cheyne thinks the utility of Nit. of Silver confined to the "stomachic and nervous" forms of the disease.

Dr. Epps (Lancet, May 9th, 1829) gives a case in which the disease had been treated with that remedy, and had not returned for eighteen months. In this the discolouration was not confined to the skin, but extended even to the choroid plexus in the brain.

Dr. J. Johnson speaks thus of the nitrate of silver: —"It is almost the only medicine I use in epilepsy, being useful at the same time as an anti-dyspeptic, and as a counter-irritant to prevent congestion of the brain; for in epilepsy, whether proceeding from weakness or plethora, the immediate state of the brain is turgescence of the blood-vessels.* He even

* Lancet, 1832.—3. vol. 1.

further adds, that he considers the question as to the functional or organic nature of the complaint to be of little consequence.

The fullest account published of the powers of this medicine, is that of Dr. Lombard of Geneva. It appeared in the Gazette Medicale, vol. 3, No. 70.

Case 1.

A man, aged 45 years, twelve years epileptic. *Cause* unknown. *Before commencement of treatment* had every fortnight two or three attacks in the day. *The treatment* lasted twenty months, and the *result* was, that he had the fits only once every month or six weeks.

Case 2.

A girl, æt. 13, three years epileptic. *Cause* unknown. *Before treatment*—twelve fits every day. *Duration of treatment*—six months. *Result*—fits as numerous as before.

Case 3.

A girl, æt. 10, sixteen months epileptic. *Cause*—a fall on the head. *Before treatment*—two or three attacks daily. *Duration of treatment*—five months. *Result*—one attack daily.

Case 4.

A girl, æt. 16, nine years epileptic. *Cause* fall on the head. *Before treatment*—number of attacks

indefinite. *Duration of treatment*—three weeks. *Number* of attacks indefinite still.

Case 5.

A woman, æt. 37, seventeen years epileptic. *Cause*, fright. *Number* of attacks indefinite. *Duration of treatment*—six weeks. *Number* of attacks still indefinite; but it is remarked that the frequency was diminished.

Case 6.

A man, æt. 64, eight years epileptic. *Cause*, intemperance. *Attacked* every fifteen days or month. *Duration of treatment*—five years. *Result*—an attack every four or seven months.

Case 7.

A man, æt. 45, epileptic three weeks. *Attacked* every week. *Duration of treatment*—five days. *Result*—undetermined.

Case 8.

A man æt. 50, twelve years epileptic. *Cause* unknown. *Attacked* every week several times in a day. *Duration of Treatment*—2½ months. *Result*—two attacks in a month.

Case 9.

A child two years and a half old, epileptic for fifteen months. *Cause* unknown. *Attacked*

three or four times a week. *Duration of treatment* — five weeks. *Result* — marked relief, but number of attacks undetermined.

Case 10.

A man aged 37, fifteen years epileptic. *Cause*— domestic afflictions. *An attack* every month or six weeks. *Duration of treatment*—a year. *Result*, two or three attacks a year.

Case 11.

A man aged 32, fifteen months epileptic. *Cause* unknown. *An attack* every six weeks or two months. *Duration of treatment*—two years. *Result*—no attack for twenty months; but the vertigo or imperfect form remains.

Perhaps we may derive some assistance in explaining the contradictory evidence respecting the efficacy of nitrate of silver and turpentine, from the success which, as reported by Dr. Graves, (Dub. Med. Journal, May 1833) frequently attends their exhibition in cases of hysteria, accompanied by determination to the head; as from the difficulty which sometimes attends the formation of a correct diagnosis, or perhaps want of due attention, mistakes may have been made with respect to the nature of such cases.

I think a review of the several results of these different modes of treatment will show a preponderance of evidence in favour of the treatment by digitalis.

For example, according to Dr. Lombard's report, the longest respite obtained was twenty months, and that only from the "grand mal," the epileptical vertigo still remaining, and this after a treatment of two years with a remedy whose discolouring property is so objectionable as marking out those so affected as undesirable objects of matrimonial connexion, an injury extending to their offspring. And in another case, after persevering in the remedy for five years, there was only a diminution in the frequency of the attacks obtained. Contrast with these the permanent cures effected by the acknowledged severe action for a few days of a medicine which leaves no visible trace after it.

Pereira mentions a case of discoloration so intense, that it obliged a London merchant to give up his business. This is a consideration which perhaps will make the risk of the digitalis treatment appear preferable. The objection would not, nor ought it to be an insuperable one, if the desired object were always gained; but it is not so in a great proportion of cases, and to have life embittered by a second affliction in the shape of personal deformity, is indeed a pitiable accumulation.

MODUS OPERANDI OF DIGITALIS.

In what I am about to say on the subject of the action of digitalis, I would wish to be understood as

attempting nothing more than to advance the first step from empiricism in its lowest and degraded towards what it is in its original and exalted sense—as merely endeavouring to attain the first step in abstraction from individual facts to general laws, without which we cannot have available knowledge in medicine or any other science. In the present state of our information, respecting the laws of the nervous system, we are in the condition of a mechanic having to do with a machine whose construction he is ignorant of, and whose motions he can but, to a limited extent regulate, and that only by diligent observation of its workings, and the effects of different agents upon it.

I believe Dr. Hallaran, of Cork, was the first who satisfactorily established the fact of digitalis being in the first instance a stimulant, and from thence concluded that it cannot be given safely under "pressure of high arterial action."

This truth, which might have been inferred from its inutility in dropsy with inflammatory symptoms, he ascertained in a case of insanity, in which, when given in the stage of excitement, it had aggravated all the symptoms; but when accidentally administered at a later period, had produced the most happy effects. This therefore coupled with its other properties, gives it a title to be classed among the cerebro-spinants of Pereira's system. Now it seems an established law of the action of many of this class of

medicines, that when given in small doses at short intervals they produce their exciting effects alone; thus, in fevers accompanied by great prostration, a few drops of Tinct. Opii, often repeated, are a usual and powerful mode of stimulating the system. But if a large dose be given, the sedative effect is produced without a proportional previous excitement; and this previous excitement is diminished in duration and intensity in proportion as the dose is increased, so that when the latter attains a certain amount, the former becomes evanescent or at least imperceptible, so immediate is the sedative effect.* This latter property it is which distinguishes the class of sedatives from mere stimulants and intoxicants, which are capable of producing more or less collapse, as a consequence of the excitement caused by them.

From the foregoing it follows as a rule of practice, when we wish for the sedative effects of one of this class of agents, to give it in such quantity as will without previous excitement bring on diminished sensibility and lessened action; a quantity evidently not only varying with the nature of the disease, but also dependent on idiosyncrasy.

On this subject Mr. Knight thus remarks :—

* Hydrocyanic acid is a marked instance of this; if given in very large doses, it produces death without convulsions; given to a less amount, it produces sudden loss of consciousness, with violent convulsions, in fact, an epileptic paroxysm.

"The term sedative is an exceedingly perplexing one, as it has been applied in the practice of physic. It has been very improperly used in being applied to drugs of very opposite powers according to their doses. Having noticed this confusion, I shall proceed with *digitalis*, which is in the majority of cases, on its *first administration*, as decided a stimulus as brandy or geneva. It never fails, however, after a few days at least, to reduce the pulse, either in force or number, and in a few instances, both in number and force. Sometimes, however, the pulse *loses* in power, but *gains* in velocity; and when this is the case, I have always found that the medicine was exerting a baneful influence on the constitution.

I have uniformly found that this powerful drug exerted a beneficial effect in allaying the maniacal paroxysms, and reducing irritability exactly in proportion as it reduced the pulse."

Dr. Hallaran, after relating a case of mania, in which, during the earlier stages, five drops had not been tolerated, but at a later period sixty drops, taken in divided doses of gtt. x, every second hour, had produced the greatest tranquillity, goes on to remark :—

"This evidently goes to prove that the digitalis is not admissible, unless where the system has been previously reduced by proper evacuants; and although its sedative quality cannot be questioned,

yet that it cannot be usefully exerted under the circumstances of high arterial action." *

In the case alluded to, it was pushed as far as sixty drops three times a day; on attempting to go still further, there was a threatened return of violence; it was then omitted, purgation was resorted to, and on the disappearance of the unpleasant symptoms, it was resumed, and increased to one hundred drops. He thinks that digitalis has a constipating effect in mania, and that this was observed to accompany the symptoms of an over-dose, which were removed by the use of purgatives. I have observed the same in some cases of epilepsy.

TOLERANCE OF REMEDIES.

Again, it would seem to be a law of nature, that the existence of a disease gives to the constitution a tolerance of the appropriate remedy. I need only instance the extraordinary quantities of tartar emetic borne by pneumonic patients, together with the fact, that as soon as the disease is removed, the natural intolerance of what in the physiological condition is a poison, returns also. Some facts of this nature almost transcend all the powers of belief. Thus, Dr. Chapman says, that he gave laudanum to the amount of three

* It must be remembered that he here speaks of its effects in small and oft-repeated doses.

pints in twenty-four hours in a case of cancer, with no other perceptible result than a mitigation of the symptoms. From hence it appears that the term "poisonous," as applied to a medicine, is altogether relative, and we are not to be deterred from giving it in apparently immoderate doses, if there appear good grounds, from analogy and experiment, for concluding that there is not proportionate danger. Indeed, simple as it may appear, it is not an easy thing to give a definition of poison. If we say "it is a substance which, given in quantities too great for the system to bear, produces disease or death," — then all our aliments are included in the category; and if, again, we say it is a substance which, taken in any, even the smallest quantities, has the same effect, it is doubtful if there be in nature such an entity. So true it is, that a given substance may, in a given quantity, be, according to Hahnemann's phrase, deleterious in its positive, salutary in its relative effects. Now the disease which we are considering is one of over-excitability, seeming to have an accumulative tendency, and the medicine which seems to be required is therefore a permanent sedative.

SPASMODIC TENDENCY IN SLEEP.

Let us now notice a feature of the disease to which sufficient attention has not, I think, hitherto

been paid. It has long been observed, that epileptic attacks are more apt to recur during sleep, and from this circumstance, as well as their termination in a soporose state, and the resemblance between epilepsy and the symptoms arising from the action of narcotic poisons, it becomes important to inquire, what there is in the condition of the system during sleep which thus seems to predispose to the invasion of this mysterious disease. Whoever has been in the habit of observing persons asleep must have remarked the spasmodic movements which, even in a state of health, frequently take place in their muscles. Boerhaave took notice of this; but it was replied, that it only occurred in those who slept in the upright position, and was the consequence of an effort to recover their lost balance. However, neither is the occurrence confined to this posture, nor the spasmodic effort to the moment of waking. In most people there is at the moment of falling asleep a spasm of the flexor muscles; many are subject to twitchings of those of the face, and more remarkably so while under the influence of slight derangement of health. If we watch a dog sleeping, we shall often observe the same phenomena, appearing to be more marked in proportion to the soundness of the repose. It is not, indeed, until some time has elapsed after awaking, that the will resumes its wonted sway; hence the difficulty of raising the eyelids, the yawning and stretching, and the incompleteness of our muscular efforts at this time. On the other hand, with

this there seems to co-exist, during sleep, an increased sensibility; a noise which suddenly awakens us, resounds in our ears with much more force than when we are awake and surrounded by stillness, for which Barthez* accounts by saying, that "the sense is then more concentrated in its organ, and isolated from the other senses."

Thus it is that under the influence of an alarming dream the voice of the person who rouses us is magnified into the sound of a pistol, thunder, &c., according to the circumstances of the dream. Nor is this the only sense thus affected. The touch is more acute—as when in nightmare the weight of one's own hand is magnified into the enormous pressure of some monster. Even the organic sensibility of the viscera is heightened; and what during our waking moments would be a slight uneasiness of stomach, becomes agony. This increased irritability of internal organs was known to Hippocrates, and expressed in the aphorism—ὕπνος τοῖς ἔντεροις πόνος.

NATURE OF SLEEP.

Wilson Philip, speaking on this subject, says, "It seems greatly to influence the phenomena of dreaming, that in order to favour the occurrence of sleep, and thus, as far as we can, prevent unnecessary ex-

* Quoted in the Dict. des Scien. Medic. (Art. Sleep.)

haustion, means are always employed at its accustomed times, to prevent as much as possible the excitement of the external organs of the senses, and consequently those parts of the brain associated with them. This renders us the more sensible to causes of excitement existing within our own bodies, while, by the inactivity of the parts of the brain which are associated with those organs, we are deprived of the usual controul over such parts of the mental functions as are thus excited; the effect of which is greatly increased by the rapidity of the operations of the memory and imagination, when not restrained by some of the various means employed for that purpose in our waking hours."

Now something similar to what follows from the loss of controul over the mental powers would appear to happen with regard to the withdrawal of the controul of volition from the system of voluntary muscles. For while those muscles which are in a continual state of contraction independently of the will at all times (as the sphincters), are uninfluenced by the state of sleep, the voluntary ones seem to have a tendency to irregular action, in fact to have a disposition to spasm. Again, physiologists who have endeavoured to explain the phenomena of sleep on chemical principles, have considered it as a state of natural narcotism, dependent on the presence of an increased quantity of carbon circulating in the blood, and thus affecting the brain: Drs. Prout and Fyfe having shown that the carbonous excretion from the

lungs is least between nine o'clock at night and the same hour in the morning. Without stopping to examine the truth of this theory, let us pursue this analogy a little farther.

Here then we find a striking coincidence between the phenomena of sleep and those of the disease under consideration. We find, moreover, that long-continued epilepsy destroys the intellectual vigour, that an over-indulgence in sleep has the same tendency; that the attacks more frequently recur during sleep, and that excess in sleep has a tendency to fix the disease. Pursuing the analogy still further to the case of narcotism, we find the action of narcotics to be — first, to stimulate, secondly, to produce a state of susceptibility of convulsions, and finally, sleep.

POSITIVE EFFECTS OF DIGITALIS.

Now, if we turn to the positive effects (as they are termed by Hahnemann) of digitalis, that is, their effect on the healthy system, we find, according to his experiments, "that it produces palpitation, mania, constriction of chest, sopor, and incontinence of urine, and alvine excretion."

Lentin says it causes constrictio gulæ, spasm, singultus, cephalalgia.

Here, then, we find not only many of the symptoms of epilepsy produced by it, but mania itself, in

which it has proved so powerful a remedy, ascribed to its action on the human frame.

How, then, it may be asked, can digitalis, which has the power of producing convulsions, cure a convulsive disease? But let us look through the list of epileptic remedies, and we shall see that most of them are, as it were, double-edged. Excitement of the genital organs is intimately connected with the disease; so much so, that Gregory thus expresses himself:—"Hinc anhelatio, palpitatio, syncope epileptica nonnunquam vel demum subita mors quæ nonnullos venere occupatos nec tale quiddam timentes abripuit." We know how great a proportion of epileptics owe the continuance of the disease to onanism; and yet marriage has cured it both in males and females, and celibacy has been ranked among the occasional causes of it. Of the medicines occasionally successful in the disease, I may mention opium and camphor, both of which produce convulsions under certain circumstances; the former, it is true, in lower animals, according to experiments hitherto made.

POSITIVE EFFECTS OF VALERIAN.

The remedies which have been used in epilepsy may be classed under these four heads:—Evacuants, nervines, tonics, and emmenagogues. From what I have said it is evident, that only the second and

third are entitled to be considered, strictly speaking, as anti-epileptic. Let us inquire whether these are exempt from the objections thus made to digitalis. Valerian has been considered a powerful medicine of the second class. In the Revue Medicale for 1830, p. 115, it is stated that M. Joerg, and a committee of twenty-seven members, were appointed to report on the effects of digitalis and other remedies, in the healthy subject. While their report is, that the effect of digitalis is to excite the organs of generation and a feeling of intoxication, they also state of valerian, that its first effect is to cause congestion of the brain, and sensation of weight in that part; and Dr. Pereira (Elem. Mater. Med.) says that its effects in large doses are headache, mental excitement, visual illusions, (scintillations, flashes of light, &c.) giddiness, restlessness, agitation, and even spasmodic movements.

POSITIVE EFFECTS OF MUSK.

Musk is another medicine which has proved useful in this disease, and its positive or physiological effects are first, heaviness of head, vertigo, headache; secondly, disposition to sleep, faintness, and heaviness over the whole body; lastly, deep and long continued sleep. In very large doses, tremblings of limbs and convulsions.

NATURE OF TONICS—ASSAFŒTIDA.

Again, as to tonics, many hold the opinion that their primary effect is stimulant. Indeed, it may be said, that tonics and stimulants mutually pass into each other, nor is it easy to ascertain their boundary. Pereira considers tonics as nearly allied to what he terms cerebro-spinants, viz., those agents whose action is a stimulus, exerted especially on the brain or spinal cord. Thus bark, in large doses in a healthy system, may produce madness, throbbing headache or giddiness, decided cerebro-spinant effects.

Assafœtida is another of the anti-epileptic medicines occasionally used. Its physiological action is genito-urinary excitement, with headache and giddiness.

Nitrate of silver, which is ranked among the anti-spasmodics, produces convulsions when injected into the veins.

Here, then, without pronouncing on the contra-stimulant hypothesis of Rasori and Tommasini, or the "similia curantur similibus" of Hahnemann, instances are not wanting in which narcotics and other cerebro-spinants have cured spasmodic diseases; even the disease in question, though in general not admitting the use of opium, has been cured by it, as in a case related by Dr. Elliotson, which was cured by muriate of morphia, in conjunction with generous diet.

POWERS OF DIGITALIS.

I am fully aware how little assistance *à priori* reasonings can render in the discovery of remedies. When, however, a medicine has been found to possess powers in a certain class of affections, we may, and often do derive advantage in ascertaining the special limits of its application from correct analogies and judicious generalization. In the instance before us, the effect of digitalis has been asserted, in the cases of its successful exhibition, to depend simply on its evacuant powers, as a purgative and emetic; and Dr. Pereira says, in his opinion, "it is not as likely to prove useful in epilepsy as in mania, because the former is generally unaccompanied by the increased vascular action which so often attends the latter;" thus limiting its powers merely to those which it exerts on the circulating system; whereas, in my mind, this is to narrow them within too small a compass. My object is to show, that it agrees in many of its effects with other medicines of established anti-epileptic powers, and that it shares with them in common some of the *primâ facie* objections that appear against it as belonging to the cerebro-spinant class of medicines, whose primary and specific effect is a disorder of one or more of the functions of the cerebro-spinal system, manifested by the production of sleep, insensibility, erroneous perceptions, judgments, and

volitions, delirium, sopor or coma, paralysis, and convulsions.

I am the more anxious to establish this relation between digitalis and other medicines of the cerebro-spinant class possessed of known anti-epileptic powers, because, as I have said, I think the opinions respecting its modus operandi have been too limited. As to its being thought to have acted in those cases of epilepsy and mania in which it has been useful, merely as an evacuant, or as possessed of the power of obviating the effects of plethora, by its direct operation on the circulation, its applicability being thus confined to those cases in which plethora or sanguineous determination to the head exists; I am convinced that this is not the sole extent of its usefulness; I have no doubt that the power it exerts over the idiopathic form of the disease, approaches more to the nature of a specific action than is implied in this view; and I am much mistaken if a more ample trial does not confirm the truth of this opinion. It is no doubt true, that in the successful cases of its exhibition there has been an extreme lowering of the circulation, but this was temporary, the circulation returned in some time after to its usual standard. There must then have been some effect independent of that on the circulation left behind. It may be said, that in these cases the circulation takes a long time to rally, and that in the meantime the constitution has time to shake off the bad habit which it had acquired, that morbid excitability capable of being roused into action even by the

normal force of the circulation. But a long-continued course of this medicine, so regulated as to keep the circulation in check for an equal length of time, has not been found to produce the effect; and a continued nausea, by means of Tart. Emetic, accompanied of course by the characteristic depressing power of this medicine so administered, has been kept up for a very long period without the desired result.

DIGITALIS IN MANIA.

Nor is this pharmaceutical analogy the only one that gives countenance to the ascription of probable high anti-epileptic powers to digitalis. The singular efficacy of this medicine in the nearly allied disease of mania, also tends to the same conclusion. We find that in exact proportion (according to Mr. Knight) to the depression of the pulse, is the benefit derived in the latter disease; and, as I have shown above, those cases of epilepsy which were completely cured, exhibit instances of extreme lowering of the circulation. Here we have two diseases, one frequently leading to the other, conjoined often in the same subject, transmitted by hereditary descent in the same families; in one of these we find digitalis confessedly a most powerful agent, and we have cases proving that where both have been united in one person, they have both given way to the one remedy—for instance, in Case 9; and again, both yielding, as in Cases 22

and 23, to the combination of this remedy with a medicine of experienced efficacy in some forms of the other. Is it then saying too much to assert that there appear strong grounds of probability in favour of the efficacy of this medicine in epilepsy?

DANGER OF DIGITALIS.

The great objection to its administration is of course the danger. I have before hinted that there was some good reason for thinking that there was not always so much as has been supposed. I find I am supported in some measure by a high modern authority; Dr. Pereira (Elem. Mat. Med.) is of opinion that more of this medicine can be tolerated than is generally thought. He adduces the cases of an infant who took twenty drops of the tincture three times a day for a fortnight; and an adult who took a drachm of the *best tincture* three times a day without any marked effect; and adds that he knows some practitioners employ it in much larger doses, viz,—an ounce or half an ounce of the tincture with less effect than may be imagined. Dr. Clutterbuck informed him that an assistant of Mr. King's assured him that this gentleman had for many years been in the habit of administering tincture of digitalis to the extent of from half an ounce to an ounce at a time; *to adults he seldom gives less than half an ounce, often one ounce,* and awaits the result for twenty-four

hours, when he repeats the dose if the pulse be not subdued, or rendered irregular by it.

These statements are somewhat startling, and, if confirmed, force upon us the conclusion that we are yet in the infancy of our knowledge respecting the particular circumstances which give the system a tolerance of such large doses of digitalis as those here mentioned.

Indeed digitalis being a cumulative medicine, we ought not to judge of its doses in the same way that we do of others. What do we mean when we say that a medicine is cumulative? Is it not that a certain amount of it requires to be taken at certain intervals to produce an appreciable effect? Now digitalis approaching, as before mentioned, to the nature of a narcotic, it may be thus stated, viz.: — that the primary stimulant effect of the average dose requires to be repeated a certain number of times before the sedative effect manifests itself; and the sedative effect which ensues ought therefore to be regarded as the result of the aggregate sedative effects of the several doses taken separately; and therefore it is with the aggregate of all the smaller doses necessary for producing this appreciable sedative effect (considered as one dose), that the large dose acting as a sedative, without the intervention of excitement, ought to be compared.

CUMULATIVE EFFECT.

During the time which digitalis takes before it exhibits its characteristic powers, we are to suppose that the process of absorption is going on, and the powers of the medicine accumulating in proportion in the system, but when the large dose is administered at once, there is no time allowed for this absorption, and it accordingly has never in any case that came under my observation, reached the kidneys. Upon this principle the vomiting, so immediately produced, in general, seems in some degree to ensure the safety of the patient, and so far may be looked upon as a favourable symptom. If this large dose were divided, and given separately for a certain number of days, the effects would be fraught with much more danger. Nor is digitalis the only instance in which security is conferred by the largeness of the dose. Oil of turpentine, given in small and divided doses, will frequently bring on hæmaturia, nephritis, and other formidable effects; while, in doses so large as to cause brisk catharsis, it is almost universally harmless; neither is digitalis a medicine with regard to which we might apprehend that, as in the case of hydrocyanic acid, the stomach would be paralysed by an inordinate dose, so as to be unable to throw off its deleterious load, in a state of the system characterized by an elevated excitability and powers of resistance to sedative agents.

On what other hypothesis than that of a morbid tolerance of these large doses can we reconcile the facts stated by Mr. King in the communication before quoted "that he has given two drachms of the tincture to a child of nine months?" It is added that "sometimes vomiting quickly follows these large doses of the digitalis, but never any dangerous symptom, as far as his observation has gone, which is extensive." Dr. Pereira has himself given it to the extent of half an ounce "without any striking effect."

DIAGNOSIS OF IDIOPATHIC FORM.

As from my view of the utility of digitalis and its limitations, the first question which must arise, when considering its fitness for any particular case, is whether the disease is idiopathic or not, we ought to have a clear understanding on this point. When, therefore, on minute inquiry, no organic affection can be detected, when there is nothing abnormal in the appetite, digestion, or nutrition, in the condition of excretions or secretions, or (in the case of a female) in the uterine functions, especially with regard to menstruation; the probability is that it is idiopathic. This probability is strengthened if we find that the disease is hereditary, and if the attacks come on without any premonitory symptoms.

After all, however, "it must be acknowledged," says Dr. Cheyne, "that the symptoms which, in dis-

tinct groups, give a specific character to a case of epilepsy, are in some instances confusedly intermingled, whereby the symmetry of our intended arrangement is disturbed, and what is of much more moment, the remedial process rendered difficult."

But supposing that we have to treat a case of the pure idiopathic form of the disease, and have made up our minds that it is one in which we are warranted to make trial of this mode of treatment; I would recommend that it should, as soon as possible, be adopted, for each succeeding fit fastens the morbid habit in the system more strongly. I think it also advisable, that when we have decided on the large dose, we should never run the risk of modifying its effects by a previous exhibition of small ones; and, further, that when the season allows of it, the preference should be given to the original formula of the fresh leaves. I do not of course mean, that every case of the disease, if we cannot immediately assign a cause for it, should be at once subjected to the strong dose of digitalis. It will take some time in every case to satisfy ourselves that there are not morbid matters in the *primæ viæ*, or intestinal worms, and that all the functions are regularly performed; and these points cannot be ascertained without the use principally of evacuants; but when we are sure that, no such cause existing, the case is idiopathic, I would advise that *too much* time at least should not be wasted in the trial of other remedies of the strictly speaking anti-epileptic order.

As for those cases in which we may conclude that they are not fitted for the exhibition of the large dose, I think a good deal may be done in the way of palliation, by digitalis in smaller doses (but still much larger than are generally used) alone, or in combination with other remedies.

TIME OF ADMINISTERING.

As well as I remember, it used to be my father's wish, in adopting this treatment, to give the dose as soon before the expected paroxysm in all cases as possible; and we accordingly have seen, that in most of his cases, a fit took place soon after taking it, or at the commencement of its violent operation. His object was to prevent the periodical return, by the super-induction, as it were, of a new action, and thus to gain time, in lengthening the interval, by breaking the morbid chain. Now on this point of the subject I would observe, that the following consideration is worth attending to.

EPILEPTIC TENDENCY CUMULATIVE.

It is a remarkable fact, and has been noticed by Knight also in his work on Insanity, that when an epileptic fit has been prevented, by frightening or startling the patient, or by interrupting the aura, a

restlessness and excitability has been produced, which has continued until the occurrence of a fit, when he has recovered his usual condition, as if that had restored the equilibrium; so that it would appear that the epileptic influence, of whatever kind it is, is cumulative, and is got rid of by a sort of explosion—as if it were, in the words of Ruediger and Ackerman—"a periodical collection of imponderable fluid in the ganglions of the nerves, discharging itself at certain periods." Be this as it may, at any rate I think the fact would lead to the propriety of administering the dose shortly after the fit, and not immediately before it, when the epileptic tendency is at its height, and may be brought into action in the first instance, before the sedative effect of the medicine has been established. As to my preference of the preparation made from the fresh leaf, I am not singular.

BEST FORM OF ADMINISTERING.

Hallaran (Treat. on Insanity) says he has strong reasons for preferring the tinct. made of the fresh to that made with the dry leaf, adding that one reason for this is, that it possesses more of the odorous property of the plant. From this opinion, thus expressed by one who had such ample experience of the remedy in the analogous disease of mania, as well as from what I have seen of its use in epilepsy, I am induced to think, that in the present state of our knowledge,

we ought to confine ourselves as much as possible to the original formula, in order to give the remedy a fair trial in the way here advocated.

TIME OF GATHERING THE PLANT.

Some difference of opinion has also existed as to the period at which the plant is in greatest perfection. Thus, Withering states the proper time for gathering the leaves to be after the flowering stem has shot up, and about the time the blossoms are coming forth. Mr. Wainwright recommends, in his letter on this subject to Dr. Withering, "that they should be gathered in a hot dry day, when the petals fall, and the seed vessels begin to swell, which is the time at which the plant may be expected to have attained full vigour." Knight, in his treatise on Insanity, says, "I have gathered digitalis purpurea so late as the end of August, long after the plant had ceased to blossom; and by selecting those plants which were vigorous, and the leaves of which were covered with a downy coat, and which had not blossomed that year, I found that they possessed the sedative power of the plant in great perfection."

PRECAUTIONS.

As fatal results have occurred in persons who were for the cure of other diseases put under the full influence of digitalis, from want of proper caution, it seems necessary to state here that a patient, under these circumstances, should on no account be allowed to assume the erect posture, for, in the instances alluded to (which however occurred in persons labouring under debilitating diseases), the first effect of such effort was to increase the rapidity and diminish the power of the circulation to such an extent as to produce, first, fainting, and subsequently death. And although I never saw or heard of any such accident in an epileptic so treated, and although, from its being a disease of unnatural excitability, I should say à priori that it was not likely to take place, yet the precaution is a proper one, and should in no case be omitted; more especially when we remember that in general the recumbent posture is less favourable to the epileptic invasion than the erect. It is also better not to interfere with the course of its operation by the use of any stimulants, unless they are imperatively called for; should the necessity, however, arise, the means recommended in such cases should be put in practice. If, while the alarming train of symptoms mentioned as the effects of poisonous doses, (cold sweats, delirium, repeated faintings, convul-

sions, local and general), have set in without the previous occurrence of vomiting; and if we fail in our endeavours to excite this by emetics, titillation of the fauces, &c. the stomach-pump should be used, ammonia and brandy administered, and in such cases, above all others, the horizontal posture strictly enforced. But I must again repeat, that the extreme case now supposed is drawn purely from imagination, so far as my own experience of large doses of digitalis in this disease is concerned.

FAILURES OF DIGITALIS.

The reputations of different medicines have exhibited many vicissitudes, and of this digitalis is a striking instance. Extolled at one time as an unfailing diuretic and specific for dropsy, it was universally and indiscriminately employed in that disease; and failing, of course, in many cases not within the reach of that or any other remedy, and many others to which it in particular was unsuited, it fell into disuse. Again cried up as a specific in phthisis, and as capable of wresting from it its victims, even on the verge of the grave, it was under such circumstances found to be powerless, and again, with as little justice, consigned to neglect. In fact, the originators or revivers of any remedy in medicine are somewhat like parents, whose over-partiality for their own offspring often leads them to expect from them

performances of which they are incapable; and I am aware that my father, led away by this feeling, used digitalis in some cases in which, from all that I have observed of its operation, it could not have succeeded. If, in the course of this Essay, I should have been unable to do more than show to what cases it is inapplicable, I shall not consider my services altogether despicable, as contributing to save this powerful agent from again suffering, with respect to epilepsy, the same reverse as in the diseases above alluded to.

POLYPODY.

I have said nothing of the polypody which enters into the original formula, because it is now pretty generally agreed that it does not possess any active powers. It is a very mild laxative, and is merely said by some authors to be anthelmintic; however it can do no harm to combine it with the more active remedy, and it may as well be done.

PREVENTION OF RELAPSE.

When we consider the great variety of exciting causes which have been known to disturb anew the re-established equilibrium of the nervous system, and that too after every known method of treatment, we cannot divest ourselves of apprehensions that a si-

milar occurrence may take place after the employment of an heroic remedy from which so much is expected in the shape of a sudden revulsion and consequent change of the entire economy, rendering unnecessary the usual course of dietetic restrictions. And this apprehension must acquire additional strength when the patient is in that rank of life in which the ability, if not the will, is wanting to give him the advantage of such precautions. And indeed with respect to all classes, we frequently find ourselves in this matter as it were between Scylla and Charybdis; if, on the one hand these restraints be necessary, on the other they have a tendency, by constantly forcing upon the patient's mind the idea of their necessity, to diminish or destroy hope, of all tonics the most powerful, as evidenced abundantly in the success which frequently attends the unabashed empiric whose confident prognosis often secures its own fulfilment.

SUSTAINED HOPE.

This is a consideration which acquires multiplied force in certain temperaments in which a desponding tendency exists. In such, indeed in all, the most powerful preventive against a return into accustomed and injurious trains of thought is travelling which, whenever practicable, should never be omitted, as forming a most important part of the after treat-

ment, by inducing new impressions, and breaking up old associations. Hence the Hippocratic aphorism 'Τῶν ἐπιληπτικῶν τοισι νέοισιν ἀπαλλαγὴν αἱ μεταβολαὶ μάλιστα της ἡλικίης και τῶν χωρίων, και τῶν βίων ποιέῃσι.'

DIET.

With regard to diet, the great principles for regulating it should be moderation in quantity, and simplicity in quality, avoiding the extremes of repletion and inanition. That the latter is no less hurtful than the former is evident from the fact that an epileptic attack has been brought on by rising in the morning fasting. In the moral regulation, the object aimed at should be cheerful hilarity of mind, as distant from depression on the one hand as from excitement on the other. Nothing should be allowed, if possible, to act upon either mind or body, which would have the effect of raising the pulse a single beat. * I cannot refrain from giving at length Dr. Cheyne's directions, nearly in his own words :—

"On whatever side the error of his previous diet

* This tendency of any disturbance in the balance of the system to exhibit its evil effects upon some weak point was familiar to the ancients, and we accordingly find the great orator of Greece making use of it in a rhetorical figure in one of his popular appeals :— *Ὥσπερ γαρ εν τοῖς σώμασιν ἡμῶν ἕως μὲν ἀν ἐῤῥωμενος ᾖ τις, ϐδεν ἐπαισθάνεται, τῶν καθέκαστα σαθρῶν· ἐπὰν δὲ ἀῤῥώστημά τί συμβῇ παντα κινεῖται κᾷν ῥῆγμα, κᾷν στρέμμα, κᾷν ἀλλο τί τῶν ὑπαρχόντων σαθρὸν ᾖ.*—Ολυνθ. β.

may have lain, whether too high or too low, it must be changed. Animal food ought to form a principal part of one at least, if not of two, of his daily meals. Milk, also, if it agrees, which it is more likely to do when fermented liquors are laid aside, is next in value. When the patient leaves his bed in the morning, he may have a light meal, such as a rusk, or slice of toasted bread, with an egg beaten up in a teacupful of warm milk-and-water; if rendered more palatable by the addition of a little sugar or grated nutmeg, there can be no objection. He should then dress, and walk three or four miles. In two or three hours after he has left his bed he may have his second meal, viz., milk, or cocoa, with bread a day old, and good butter. He may rest for three hours after breakfast, and follow either business or education. Then he must again walk — if an adult, sufficiently vigorous—from five to eight miles. At from five to six hours after his second meal he may have a third, consisting of good meat—mutton void of fat, poultry, game, or very tender beef, roasted or boiled, and without seasoning — the quantity for an adult not more than six ounces; bread; with a moderate quantity of well-boiled vegetables, if they have not the effect of producing flatulence. Drink also of limited quantity—one tumbler of water, toast-and-water, or milk-and-water. He may then rest for two hours, but not sleep. In addition to the limit proper in this particular to epileptics, it does not seem certain, as some appear to think, that it favours digestion. He

may stroll in a garden, read an amusing book, or chat with an agreeable friend — in short, do anything which will divert his mind without in the least exciting the pulse: he may then resume more active exercise for an hour or two. In five or six hours after dinner a light supper may be taken, consisting of not more than four ounces of meat, with bread; or a cup of milk, and a water biscuit. The remainder of the evening may be spent in cheerful society, in a room not too close, not over-heated, nor over-lighted, of such temperature as to prevent the sensation of a chill after the day's exertion; and everything having either a depressing or exciting tendency must be avoided. He ought to be in bed at eleven, and up at six.

"The scalp ought to be shaved once a week; and the head being held over a basin, a jug of tepid water may be poured on it, after which it ought to be well rubbed with a flesh brush. This process should be repeated daily. The covering worn on the head by day should be of the lightest kind; and the patient should gradually bring himself (if not previously accustomed to do so) to sleep without either night-cap or curtains; his shoulders and head should be raised, and his feet kept warm while in bed; and his chamber ought to be large and airy, without a fire. In winter, however, his bed may be warmed, and a fire may be lighted in his dressing-room. A comfortable temperature must be preserved in his extremities by exercise, friction, or clothing."—(Art. Epilepsy, Cyclop. Pract. Medic.)

CONCLUSION.

To conclude. I have endeavoured — with what success it is not for me to say—to establish these points :—

First, That in the treatment of true idiopathic epilepsy, digitalis in the large dose has had as much success, in proportion to the number of trials made, as either of the two other agents, viz., nitrate of silver, and oil of turpentine, with which I have compared it; and succeeded too in cases in which they and other remedies had been fully tried and had failed.

Secondly, That there is good ground for supposing that there is not as much danger in this mode of treatment as would at first sight appear.

Thirdly, That it is only in the uncomplicated form of the complaint that (given in this way) it can be expected to succeed and ought to be administered.*

Dr. Latham speaks thus of oil of turpentine :—

"I have given this remedy in several epileptic cases — in one or two with complete success, and in others with some advantage. In so deplorable a malady anything that in the slightest degree mitigates the paroxysm is commonly resorted to with avidity ;

* In complicated cases, especially those with irremediable disorganization, we shall do well to remember Celsus's caution :—Est prudentis hominis primùm eum qui servari non potest non attingere ne videatur occidisse quem sors ipsius interemit."—L. v., C. 26,

but out of a given number of cases, if in several the fits which occurred daily have been put off for a time, and then have attacked the patient under a much milder form, and if in some a permanent cure has been experienced, I think the remedy which has effected thus much entitled to a favourable consideration."

And Dr. Perceval, on the same subject :—"I should hesitate on the propriety of promulgating a method of remedial treatment, whose success has been by no means complete, were it not that a certain degree of relief has been obtained by it in a very formidable malady, and a ray of light afforded, which other practitioners may extend and improve to more perfect success."

I would fain hope, that on similar grounds, I too may claim indulgence; and if, by the few observations which I have made, I shall in any way facilitate or remove objections to the judicious prosecution of further experiments by my more competent professional brethren, I shall feel truly gratified; still more so if the hopes of success in which I have indulged shall prove well founded.

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